

1 ABSTRACT OF THE DISCLOSURE

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3 A thermal barrier coating composition comprising a base
4 oxide, a primary stabilizer oxide, and at least one dopant oxide
5 is disclosed. Preferably, a pair of group A and group B defect
6 cluster-promoting oxides is used in conjunction with the base
7 and primary stabilizer oxides. The new thermal barrier coating
8 is found to have significantly lower thermal conductivity and
9 better sintering resistance. The base oxide is selected from the
10 group consisting of zirconia and hafnia and combinations
11 thereof. The primary stabilizing oxide is selected from the
12 group consisting of yttria, dysprosia, erbia and combinations
13 thereof. The dopant or group A and group B cluster-promoting
14 oxide dopants are selected from the group consisting of rare
15 earth metal oxides, transitional metal oxides, alkaline earth
16 metal oxides and combinations thereof. The dopant or dopants
17 preferably have ionic radii different from those of the primary
18 stabilizer and/or the base oxides.